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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of TAKAOKI et al.

5 Serial No.: 09/739,802 Group Art Unit : 1754

Filed : December 20, 2000 Examiner : Kuhar, Anthony J.

For: CATALYST COMPONENT FOR ADDITION POLYMERIZATION, CATALYST  
FOR ADDITION POLYMERIZATION, AND PROCESS FOR PRODUCING ADDITION  
POLYMER

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\* \* \* \* \*

DECLARATION UNDER 37 C.F.R. § 1.132

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15 Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

I, Kazuo, TAKAOKI, a Japanese citizen residing at 1-9-1315,  
20 Yushudainishi, Ichihara-shi, Chiba, 299-0125 JAPAN,  
declare:

That I am one of inventors of the identified-application;

That I am familiar with the prosecution history of the  
above-identified application; and

25 That the following experiments were conducted by me or under

my direct supervision.

## 1. Purpose

To know a difference in a polymerization activity between  
5 a catalyst using a fluorine-substituted phthalocyanine cobalt  
and one using phthalocyanine cobalt.

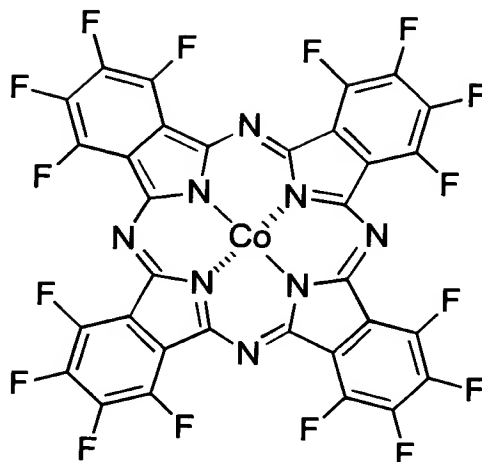
## 2. Experiment

### Experiment 1 (claimed invention)

10 After drying under vacuum an autoclave having an inner volume  
of 400ml equipped with a stirrer and replacing with argon, 190ml  
of hexane as a solvent and 10ml of 1-hexene as a comonomer were  
charged and the autoclave was heated to 70°C. After the heating,  
ethylene was fed while adjusting at an ethylene pressure of  
15 6kg/cm<sup>2</sup>. After the system was stabilized, 0.25mmol of  
triisobutylaluminum was charged, successively, 1.0μmol of  
ethylenebis(indenyl)zirconiumdichloridewas charged, further,  
86.5mg (101μmol) of the complex A having the under-mentioned  
structure was charged, and polymerization was started. The  
20 polymerization was carried out for 30 minutes.

As a result of the polymerization, 18.6g of an  
ethylene-1-hexene copolymer were obtained. Polymerization  
activity was  $3.7 \times 10^7$  g/mol/h, SCB was 19.37,  $[\eta]$  was 1.29dl/g,  
Mw was 88000, and Mw/Mn was 2.6.

Complex A:



manufactured by Aldrich Co., Ltd.

5 The orbital coefficient of the valence p-type atomic orbital was 0.879, and the lowest vacant orbital level (energy) was 0.0035 (a.u.). (a.u.: atomic unit)

The calculation was carried out in the same manner as in Example 1 of the specification in the above-identified application.

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## Experiment 2

Experiment 1 was repeated except that 117  $\mu$ mol of phthalocyanine cobalt in which fluorine atoms in the complex A were changed to hydrogen atoms was used in stead of the complex A of 86.5mg (101  $\mu$ mol).

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But, a production of a polymer could not be confirmed.

In addition, the lowest vacant orbital level was determined in the same manner as in Experiment 1. The value was 0.0261 (a.u.).

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## 3. Conclusion

When the cobalt complex of the phthalocyanine substituted with fluorine atoms represented by the above formula was used as a catalyst component for olefin polymerization, it shows a polymerization activity.

5           On the other hand, the cobalt complex of the phthalocyanine not substituted with a fluorine atom show no polymerization activity.

10           That I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine  
15 or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above identified application or patent issued thereon.

20           Signed this 3rd day of October 2002.

Kazuo TAKAOKI

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